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REPORT ON THE ORGANIZATION

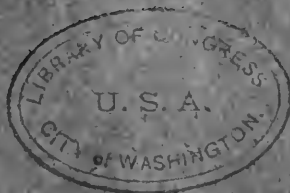
OF THE DEPARTMENT OF

AGRICULTURE AND THE MECHANIC ARTS

OF THE

UNIVERSITY OF MISSISSIPPI.

Eugene W. Hilgard.



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REPORT ON ORGANIZATION

OF THE DEPARTMENT OF

AGRICULTURE AND THE MECHANIC ARTS.

DR. JOHN N. WADDEL, *Chancellor University of Mississippi*:

Dear Sir,—In accordance with suggestions made by yourself as well as several members of the Board of Trustees, I endeavored, during my recent attendance upon the meeting of the American Association for the Advancement of Science, to obtain as much information as possible concerning the organization, practical working, and success of the several Agricultural and Mechanical Colleges now in operation in the United States, under the land-grant made for the purpose. I found, however, that but very few representatives of such institutions were in attendance at Indianapolis; and that a call for a special convention of presidents and professors of agricultural colleges, to meet at Chicago on the 24th inst., had been issued. Under the circumstances, I thought it incumbent upon me not to let this unusually favorable opportunity pass unimproved; and so, after the adjournment of the Indianapolis convention, proceeded to Chicago.

I found the attendance much larger than, from the limited publicity of the call and short notice given, I had been led to expect. The meeting seemed in this case *really* to justify the use of a much-abused phrase—viz., to “supply a want long felt.” It appeared in the course of the discussions, that the predominant thought of the originators of the call had been the establishment of uniformity in the agricultural experiments conducted by the several institutions; and some of the delegates could not, to the last, divest themselves of the idea that this subject should have been made paramount. But the great majority evidently held that the consideration of the educational interests, and of the results reached by the various plans of organization and study, was first in importance; and the reports made thereon, successively as called upon, by the presidents or other representatives of twelve institutions (two or three only of importance being unrepresented), were decidedly the most interesting and practically important feature of the meeting. The general conviction of the great benefits to be derived from a more frequent personal interchange of views, soon found expression in the appointment of a committee on the formation of a permanent organization. In view of the brief space of time allowed for consideration, and of wide differences of opinion as to the scope to be given to the

association, the committee reported in favor of referring the whole subject to a committee consisting of the officers of the convention; the latter adjourning, after a two days' session, to meet at the call of the president, Dr. Gregory, of the Illinois Industrial University.

I herewith subjoin the press reports of the debates, tolerably correct as far as they go, but of course very defective as regards many important points of detail, concerning which I took pains to inform myself as fully as possible in private conversation. I will endeavor to present to you as briefly as may be the general results arrived at, which to my mind settle conclusively the plan that ought to be adopted in the organization of our own agricultural and mechanical department.

The general plan of instruction varies, as you are aware, between two extremes; represented, respectively, by the original organization of the Agricultural College of Pennsylvania on one hand, and by the Sheffield School of Science, at Yale College, on the other. In the latter institution, the theory and practice of agriculture and the mechanic arts are taught in the lecture-room and laboratory alone. In the Pennsylvania College the practice, or in other words the *handicraft*, of agriculture was originally made altogether the predominant feature; it was a large model farm, on which the students were the laborers; their spare time only, so to speak, being devoted to the study of principles, and general education. It was thought that this plan would best conduce to what is popularly thought to be *practical* education, and secure popular support and patronage to the institution; the more as the labor of the students, though not directly compensated, served to diminish greatly their expenses in the way of boarding, lodging, etc.

At first this system seemed destined to be successful, but after a few years it became manifest that it did not fulfill the requirements of the times. The constant drudgery of a minimum of three hours' daily labor was felt to be particularly onerous by the more advanced students, and by those "farmers' sons" specially intended to be benefited by the school, but who had long ago acquired the mere handicraft of agricultural operations, and could not see the propriety of thus detracting from their opportunities for higher education, and, as they thought, "being compelled to support the institution by their labor."

Without examining in detail, for the present, all the concurrent causes, it may suffice to state that, three years ago, the patronage of the institution had so grievously dwindled, that a total reorganization became imperative. The essential changes made were a diminution of the hours of obligatory and uncompensated labor to about one half—say ten hours per week—and its restriction, as obligatory, to the Freshman and Sophomore years. This system has had but a two-years' trial, and under it the prosperity of the institution has risen to a satisfactory level. Nevertheless, I think I interpret rightly the remarks of some of its officers in stating, that the tendency is toward a still further reduction of obligatory mechanical labor, rather than in the reverse direction.

The experience of the Pennsylvania College has thus, in a comparatively brief space of time, verified the conclusions arrived at both in England and on the continent of Europe—viz., that truly practical education in agriculture is not that which, by a mere routine repetition of mechanical operations, interlarded with a little explanatory theory, attempts to conciliate the popular prejudice against "book-learning." The subject has been well and thoroughly investigated by Prof. McChesney, of Illinois, whose valuable paper on "Agricultural Education in Europe," published in the report

of the Commissioner of Agriculture for 1868, has exerted a most beneficial effect upon the educational programme of the American colleges just being organized.

But before passing to the consideration of that golden mean which seems destined to realize, to the greatest possible extent, the benefits of technical education, and which has been successfully introduced into most of the Western colleges, let us for a moment consider the actual and possible results of the other extreme above referred to—viz., that of the Sheffield School. It is hardly claimed even by its most ardent apologists, that it would be a proper training-ground for the bulk of the agricultural population; yet it may be seriously questioned whether, even as it is, it does not contribute more toward the progress of agriculture and the mechanic arts than would be the case with an institution based on the so-called “practical” plan. The little knowledge, apart from mere practice, with which the student is sent forth from the “practical” school, will be extremely apt to be of that dangerous order which obfuscates common sense, while favoring that arrogant self-reliance, which is as characteristic of the sciolist, as modesty and reticence is of the true scholar. It is too often the case that the men who plume themselves upon being pre-eminently *practical*, are so only with reference to one particular locality or set of circumstances, and fail utterly so soon as removed from the limited circle where their memorized rules are applicable. The truly practical man is he who, by combining the knowledge of principles *and* practice, is enabled to adapt the latter to any change of circumstances and external conditions.

While, therefore, an institution like the Sheffield School may not return many students to the cornfields whence they came, on account of the taste acquired for more abstract professions, it at least sends forth scholars who, either as teachers, superintendents, or in numerous cases as amateur farmers in later life, contribute largely to the progress and elevation of the pursuit of agriculture. As one of the delegates at the Chicago convention pregnantly remarked, “an institution whence have issued Johnson’s works on ‘How Crops Grow’ and ‘How Crops Feed,’ can hardly be charged with failing to benefit the cause of agricultural education.”

But since we are nowise compelled to accept either of the extremes mentioned, it behooves us to consider what are the proper ends to be attained in the establishment of these colleges. It is thought by some that the immediate object in view should be to educate, as far as possible, “every farmer’s son in the country;” but such diffusive education can never be the object of the higher educational institutions until we shall be much nearer to the millennium. Before “every farmer’s son” shall be able to receive and practice the principles of agriculture, the most complicated of all arts, it is necessary that the rudiments at least of Natural Science should be taught in the primary schools—that boys should be taught to reason in Physics, Chemistry, and Physiology, as they now do in Arithmetic. That this is a state of things far from Utopian, has already been sufficiently proven. It will become less and less difficult as our knowledge, as well of the subjects themselves as of the rational method of teaching, progresses. But at present, and for some time to come, the higher education in agricultural as well as other colleges is likely to be the privilege of comparatively few, whose fortune, early opportunities, or talent, allow them to attain that amount of preliminary training, and to spend in their college course that amount of time and money (whether their own or provided by scholarships), commensurate with the magnitude of the end to be attained.

In the words of the able committee report on the course of study in the Illinois

Industrial University: "The thorough mastery of these arts, and of the sciences applicable to them, requires an education different in kind, but as systematic and complete, as that required for the comprehension of the learned professions. It thus avoids the folly of offering, as leaders of progress in the splendid industries of the nineteenth century, men of meager attainments and stunted culture; and steers clear also of that other and absurder folly of supposing that mere common school-boys, without any thorough discipline, can successfully master and apply the complicated sciences which enter into and explain the manifold processes of modern Agricultural and Mechanic Art. Nor is it forgotten that man is something more than the artisan, and that manhood has duties and interests higher and grander than those of the workshop and the farm. Education must fit for society and citizenship, as well as for science and industry."

It is a maxim well settled by the history of civilization, that learning and enlightenment radiate from centers, whose influence in elevating the general standard of education is sensibly proportional to the elevation of their own standards respectively. To lower the standard on pretense of benefiting a larger circle, has ever proved a lamentable failure, however plausible it may sound in the mouth of a demagogue on the stump. Rapid progress in popular enlightenment has ever been achieved rather through the example and influence of a few shining lights, whose leadership the masses strove to follow. A Dickson in every county of the state would do far more toward the popularization of rational methods of agriculture, than any amount of diluted knowledge diffused among the population could do in an equal length of time.

While, therefore, access to the direct benefits of the institution should be as easy as consistent with its limited funds, we should stoutly insist that its main object is to impart, besides a general education, a thorough knowledge of the principles of agriculture, combined with such an acquaintance with its practice as will enable its graduates not only *to know how things should be done, but to do them themselves in the field*. But, beyond the practice requisite to attain this end, the mechanical operations should not be made to encroach upon the time of the student; nor should the farm, upon which this practice is to be acquired, be considered otherwise than as a means of instruction, both by way of exercise and example, in the details. In the latter respect it should and must be a "model," but not in the sense of pecuniary success; it being fully understood that the latter can only result from a judicious application of the general principles to local circumstances infinitely varied. The flagrant failure of the old-time "model farms" to educate truly practical men, resulted chiefly from their being accustomed to carrying out a certain routine, necessary to pecuniary success in that particular locality, but perhaps fatal to the same in any other.

A truly "model" farm cannot afford to be embarrassed by the requirements for instruction; and still less can instruction in general principles afford to be hampered by local conditions of pecuniary success. This is the verdict of dearly bought experience.

Apart, however, from its object as a means of instruction, the Agricultural College farm should, and is required by law to, subserve another important but clearly distinct purpose—viz., that of carrying on agricultural experiments. This is a delicate and most difficult duty, if properly performed; and is in the last degree incompatible with that lucrativeness which is the first postulate of a "model" to be copied.

Of course it would be very desirable that a *truly model farm*, in every sense, should be near, or even attached to, the college; and this is the case in several now existing. But then it must be distinctly understood to be a separate concern, and that neither experimenting nor instruction are lucrative in their nature. Such a farm, to be looked at and worked on, if desired, but not otherwise interfered with by the agricultural students, may be usefully established at any time when capital for the purpose may be at disposal; but it is not to be considered a matter of primary necessity, though useful as an illustration of correct application of principles to a particular case.

It follows from the above considerations, that the labor required for the cultivation of the college farm should be provided for independently of the obligatory labor of students. Nevertheless, it is undoubtedly desirable that those who may wish to perform agricultural labor, beyond that required as a part of instruction, should be afforded opportunity of doing so. And this is actually the practice of the majority of our agricultural colleges, labor so performed being paid for by the hour, according to kind or quality, or by the job, as the case may be. In Western colleges especially not only do students thus materially reduce their expenses, but the useful occupation thus afforded, whether on the farm or in the workshop, contributes materially toward the preservation of good health, order, and morality. Of course the amount of labor thus obtained will vary greatly; but the operations of the farm generally can and should be extended in proportion as the demand for such occupation may justify. This system has been carried out most successfully and extensively at the Illinois Industrial University, as well as at the Michigan College of Agriculture. At the Iowa College, thus far, all the labor has been performed by students; but the experience of that institution, exceptionally favorable in this as well as in some other respects, is perhaps too brief to serve as a safe basis elsewhere.

The dormitory system (conjointly in many cases with a Commons Hall connected more or less directly with the college farm) has thus far been introduced into most of the colleges now in operation—more, it would seem, from the force of habit than from a conviction of its adaptation to the best interests of education. The military discipline concurrently established has, in several cases, prevented the serious troubles mostly attendant upon that system; but there is a decided disposition not to have any more of it hereafter, and to dispense with it, when practicable, where it exists. At the Illinois Industrial University, as well as at that of Iowa, a very successful trial has been made of a system of self-government among the students—offenders against the rules adopted by them, and ratified by the faculty, being brought before a court elected by themselves, which generally punishes by fine. Whether this system will stand the test of time remains to be seen; but the faculty seem altogether hopeful of its success, thus relieving them from the most disagreeable and thankless duties which it falls to the lot of college officers to perform.

A striking feature in all, or almost all, the Western colleges is the unquestioned admission of young women to any of the courses they may desire to follow; and the universal testimony goes to show that not only do they, as a general thing, fully hold their own as compared with the male students, but that their influence on the behavior and diligence of the other sex is extremely beneficial. It may perhaps be fairly assumed that the benefit is reciprocal; but it has been a matter of surprise to me to find almost the same courses prescribed to both sexes. Though not perhaps in accordance with the “advanced” views of the times, it has seemed to me that a

special course in *housekeeping*, in all its branches, might advantageously be substituted for some of the studies now pursued—if not inconsistent with the XVth Amendment.

I must here allude to a wide-spread prejudice which, in this state as well as elsewhere, has manifested itself with reference to the local association of literary and "professional" students, with those of the colleges in question. It is thought by some that there is a natural antagonism between the two classes, and that, in order to protect the latter class against the airs of superiority assumed, and more or less "demoralizing" influence exerted by the former, it would be necessary to separate them as widely as possible; the more as for the agricultural students a different kind of discipline would be necessary.

This whole argument is based primarily upon the supposed existence of a prejudice against the comparative dignity of agriculture and the mechanic arts, as connected with manual labor. But it forgets that this prejudice, so far as it can claim any consideration in our day and country, is directed against the mere *handicraftsman*—the uneducated laborer who works by rote only, like a machine. It is this connection which has *engendered* the prejudice on the part of the educated classes. But if any such feeling against physical labor, *as such*, even when connected with high mental culture, still rankles in the public bosom, it certainly is the peculiar duty of our educational institutions to discountenance it as a relic of barbarism, and to assert stoutly the equal dignity of all departments of knowledge. Indeed, few of the "learned" professions require so great a scope of scientific knowledge, sound judgment, and common sense, as is involved in a thorough understanding of the principles and practice of agriculture.

The objection against the association of the two classes of students might be valid, were it contemplated that those of the industrial colleges should be mere apprentices to a *trade*. So far from this, the law of Congress explicitly requires that they shall be *educated*; and as educated men they will be socially the peers of those similarly trained, whatever be their particular occupation. Nor can there be any valid reason for subjecting one class of students to a discipline different from that prescribed for the other, if the true object of the Industrial Colleges be kept in view. To "train the millions to their trades" is equally beyond their power and their province.

Practically, the difficulties encountered on this score have been insignificant in the West. And even in the East, where the literary corps of Yale, Harvard, and Amherst were wont to look down a little upon the "Aggies," a sound beating in a boat-race, lately administered by the latter, has brought about quite a revulsion of feeling. The compulsory labor system has doubtless been largely concerned in perpetuating the ancient prejudice; and its abandonment will remove the last bar to the recognition of industrial students as members of the "professional" class.

As regards the length of the full course, it is without exception, I believe, fixed at four years; "and that," as a distinguished delegate at Chicago said with emphasis, "is full short for what they ought to learn, in justice either to themselves or the institution. It would be sufficient did they but come better prepared."

I have but cursorily adverted to the mechanical department of these colleges. There are but few, so far, in which the mechanic arts have been given equal prominence with agriculture; among these are Kentucky University and the Illinois Industrial University, where regular workshops have been erected; so that, *e. g.*, at

the last-named institution, a complete steam-engine was last year constructed by the advanced class. The plant of this department is of course expensive; and while in Minnesota, for example, it may fairly claim first attention as being first in importance, for the same reason agriculture should in this state enjoy a similar precedence, so long as a dilution of the available resources upon both branches simultaneously would emasculate both.

As regards military instruction, it has in most cases been found to weigh heavily on the institutions, unless some other chair was filled by an incumbent able and willing to perform this besides his regular duties. A strong disposition was manifested by the convention toward a removal by Congress of the military clause as obligatory upon the colleges, unless special provision were made for a detail of United States army officers for the purpose.

As regards the composition of the Faculties, the departments are subdivided in a great variety of ways, according to the means of the institution. I have found no reason to change the general programme submitted to you, some time ago, with reference to the special case of our agricultural and mechanical department, and its extremely limited means, so far as we can at present foresee.

To fulfill the primary conditions of the grant there will be required, in addition to the chairs now established (though not all filled), the following appointments:

1. A Professor of Practical Agriculture in all its branches, including dairy-farming, stock-raising, and fruit-culture.
2. A Professor of Technology and the Mechanic Arts.
3. A Superintendent of the Farm.

This minimum array of employees presupposes, of course, that—

1. The Chair of Civil Engineering be filled; also,
2. The Chair of Botany and Zoölogy; Horticulture to be included in the same.
3. That Agricultural Chemistry, as well as the special Agriculture and Economic Geology of the State, be otherwise provided for.

The latter subjects might, with particular propriety, be taught by the State Geologist, who must be presumed to be, *ex officio*, most especially competent in the premises. The results of the geological and agricultural survey of the state (the field-work of which is now as nearly completed as for the present may be expedient) would thus be promulgated and rendered available to the progressive men of the state, in the most direct and authentic manner; while the remaining office-work, together with such as is involved in the continually increasing demand for information and analyses of all kinds, on the part of the agricultural and industrial population, could still progress as heretofore under his direction, in the hands of competent assistants.

It need hardly be insisted on that in order to make the above "*personnel*" suffice for the requirements of instruction, the greatest care in the selection of incumbents is absolutely essential. It is comparatively easy to find men who can, or think they can, teach either theory or practice satisfactorily; but it is far from common to find those who combine both, especially when the range of knowledge required is great. No one who has not made the subjects to be taught a special study, and given proof, by independent research, of his ability to teach without a text-book before him, should be deemed competent to fill the chairs in question. The superintendent of the farm should be a man not only of practical experience and common sense, but of sufficient education and understanding of agricultural science to enable him to second, intelli-

gently, the plan of instruction pursued by the professor of agriculture, and to carry out experiments prescribed.

The college farm need not at first be very large—no larger than is requisite for the purpose of exemplifying the uses of the various improved implements, manures, and modes of culture of the different crops suited to the climate, to such an extent that every student may be enabled to become personally conversant with them. And the immediate outlay required for such an establishment would not be very great, so long as matters are not complicated by entering to any large extent upon cattle-raising and dairy-farming, which of themselves necessitate a large plant.

As for purely experimental plots, while ultimately a matter of considerable importance, I do not think they ought to be allowed to encroach upon the primarily needful provision for agricultural education, until funds shall be more abundant than at present is likely to be the case.

A botanical garden, with green-house and propagating pits, are of course essential prerequisites to successful instruction in the important department of Botany and Horticulture. They should be established concurrently with the farm, under the direction and superintendence of the professor.

A collection of improved implements is also indispensable. This, however, can probably be obtained at small cost, in view of the fact that no advertisement can be more useful to the manufacturer, than the exhibition and use of his implements at the State College of Agriculture. Most of the Western colleges have thus, I find, received the major part of their stock of implements either as presents, or at a heavy discount from the selling price. Similar advantages can no doubt be secured for our institution, if proper steps in that direction be taken.

I estimate that an expenditure of from six to eight thousand dollars, applied with a strict view to prime necessities, would secure a plant sufficient to form such a basis for practical instruction in the agricultural department as to insure a fair start. Much more than this will of course become necessary as the classes advance and increase in numbers; but we may confidently hope that the magnitude of the interests involved, and the direct benefits accruing to the industrial classes, will induce a wise liberality toward the institution as necessities may arise. But for the additions made to the congressional grant by state appropriations, as well as donations and endowments from individuals and communities, several of the most successful institutions in the country could scarcely have been called into existence, much less launched on their present career of usefulness and prosperity.

All of which is respectfully submitted.

EUG. W. HILGARD, ✓

Professor of Experimental and Agricultural Chemistry.

UNIVERSITY OF MISSISSIPPI, August 29, 1871.



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